Hammersmith & Fulham Council
Air Quality Annual Status Report for 2017
Date of publication: May 2018

This report provides a detailed overview of air quality in Hammersmith & Fulham during 2017. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

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Configuration			
Version	**Date**	**Reason for issue/Summary of changes**	**Status**
01	31/05/2018	Note ratified diffusion tube data not available	Final
02	12/11/2018	Diffusion Tube Data updated to reflect ratified data in Final London Wide Environment Programme Diffusion Tube Study released 16.10.2018	Final

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[1] LLAQM Policy and Technical Guidance 2016 (LLAQM.TG(16)). https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs

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Abbreviations

AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BEB	Buildings Emission Benchmark
CAB	Cleaner Air Borough
CAZ	Central Activity Zone
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM_{10}	Particulate matter less than 10 micron in diameter
$PM_{2.5}$	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A.   Summary of National Air Quality Standards and Objectives

Pollutant	Objective (UK)	Averaging Period	Date[1]
Nitrogen dioxide - NO_2	200 µg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 µg m^{-3}	Annual mean	31 Dec 2005
Particles - PM_{10}	50 µg m^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 µg m^{-3}	Annual mean	31 Dec 2004
Particles - $PM_{2.5}$	25 µg m^{-3}	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020
Sulphur Dioxide (SO_2)	266 µg m^{-3} not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
	350 µg m^{-3} not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 µg m^{-3} mot to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

Note: [1] by which to be achieved by and maintained thereafter

Figure 1. Map of AQMA boundary (whole borough)

London Borough of Hammersmith and Fulham
Air Quality Management Area Boundary
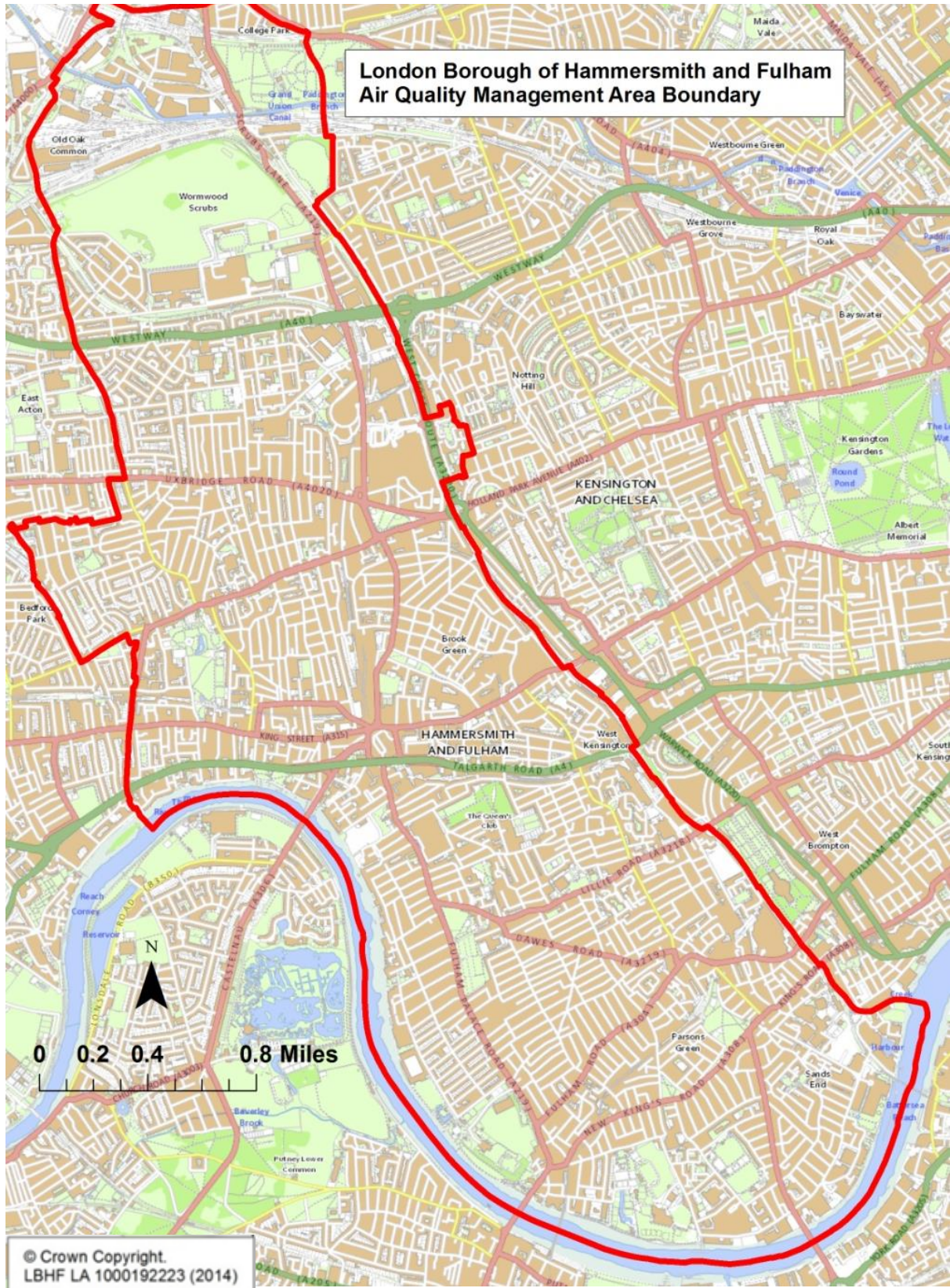
1.   Air Quality Monitoring

1.1   Locations

Table B.   Details of Automatic Monitoring Sites for 2017

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
HF4	*Shepherd's Bush*	*523313*	*179900*	*Urban Roadside*	*Y*	*6*	*2.0*	*2.0*	*NO2,PM10*	*TEOM, Chemiluminescent*

Figure 2. Map of Automatic Monitoring Site

Figure 3. Map of Non-Automatic Monitoring Sites

*Please note LBHF 4 is the automatic monitoring station

Table C.   Details of Non-Automatic Monitoring Sites for 2017

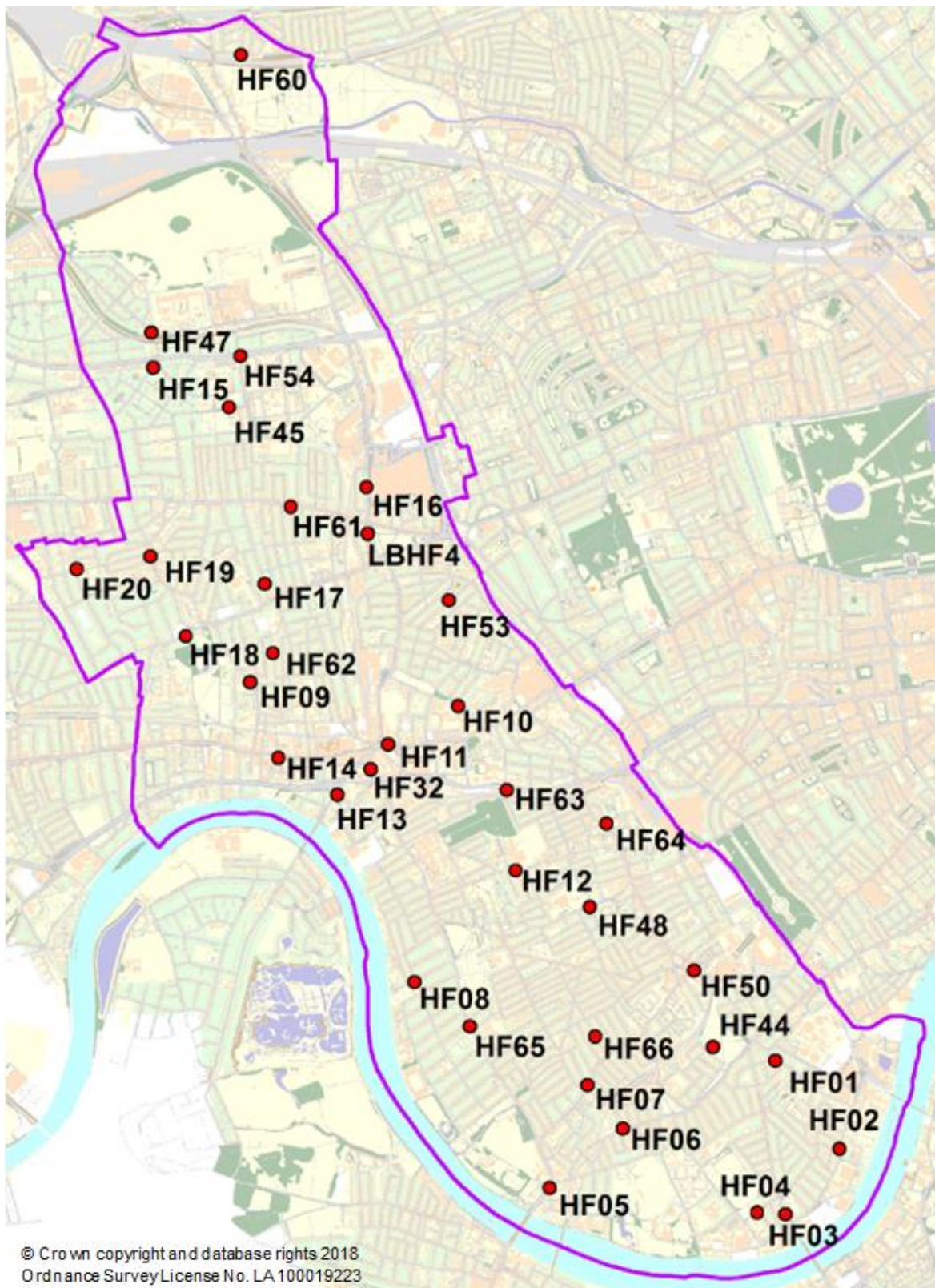| Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
HF01	Bagleys Lane	525760	176732	Roadside	Y	5	1	2.5	NO2	N
HF02	Townmead Road	526146	176205	Roadside	Y	5	1	2.5	NO2	N
HF03	Wandsworth Bridge Road	525819	175810	Roadside	Y	5	1	2.5	NO2	N
HF04	Hugon Road	525652	175821	Urban Background	Y	3	1	2.5	NO2	N
HF05	Fulham High Street	524406	175969	Roadside	Y	5	2	2.5	NO2	N
HF06	New Kings Road	524846	176325	Roadside	Y	5	1	2.5	NO2	N
HF07	Fulham Road	524633	176585	Roadside	Y	3	1	2.5	NO2	N
HF08	Lysia Street	523595	177206	Urban Background	Y	5	1	2.5	NO2	N
HF09	Paddenswick Road	522606	179008	Roadside	Y	5	1	2.5	NO2	N
HF10	Brook Green Road	523856	178863	Roadside	Y	5	1	2.5	NO2	N
HF11	Hammersmith Road	523436	178632	Roadside	Y	0	5	2.5	NO2	N
HF12	Greyhound Road	524200	177875	Roadside	Y	5	1	2.5	NO2	N
HF13	Hammersmith Bridge Road	523129	178331	Roadside	Y	9	3	2.5	NO2	N

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
HF14	Kings Street	522777.17	178551.98	Roadside	Y	3	1	2.5	NO2	N
HF15	Hemlock Road	522024	180896	Roadside	Y	5	1	2.5	NO2	N
HF16	Wood Lane	523305	180176	Roadside	Y	5	1	2.5	NO2	N
HF17	Conningham Road	522693	179595	Roadside	Y	5	1	2.5	NO2	N
HF18	Goldhawk Road	522220	179281	Roadside	Y	5	1	2.5	NO2	N
HF19	Askew Road	522006	179760	Roadside	Y	5	1	2.5	NO2	N
HF20	Lefroy Road	521564	179685	Urban Background	Y	3	1	2.5	NO2	N
HF32	Hammersmith Broadway	523329	178484	Urban Roadside	Y	5	1	3.0	NO2	N
HF44	Eel Brook Common	525386	176816	Urban Background	Y	45	32	3.0	NO2	N
HF45	Bryony Road	522480	180655	Urban Background	Y	8	1	3.0	NO2	N
HF47	Du Cane Road	522013	181106	Urban Roadside	Y	3	1	3.0	NO2	N
HF48	Lillie Road	524647	177657	Urban Road-side	Y	3	1	2.55	NO2	N
HF50	Fulham Broadway	525273	177273	Urban Roadside	Y	3	4.7	3.0	NO2	N
HF53	Addison Gardens	523801	179498	Urban Background	Y	5	1	3.0	NO2	N
HF54	A40 Westway	522550	180963	Urban Roadside	Y	5	3	3.0	NO2	N

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
HF60	Waldo Road	522550	182790	Urban Back-ground	Y	4	1	2.46	NO2	N
HF61	Uxbridge Road	522850	180060	Urban Roadside	Y	3	1	3.0	NO2	N
HF62	Cardross street	522745	179179	Urban Background	Y	3	1	2.47	NO2	N
HF63	Talgarth Road	524148	178358	Urban Roadside	Y	5	1	3.0	NO2	N
HF64	North End Road	524747 (July-Sept)	178158 (July-Sept)	Urban Road-side	Y	3.73	1	2.67	NO2	N
HF64	North End Road	524770 (Jan-June)	178150 (July-December)	Urban Road-side	Y	13	1	2.67	NO2	N
HF65	Fulham Palace Road	523926	176940	Urban Road-side	Y	5	1	2.58	NO2	N
HF66	Radipole Road	524680	176880	Urban Background	Y	5	1	3.0	NO2	N

Overview

The monitoring network was reviewed in 2017 and an additional 20 diffusion tubes were located throughout the borough with a focus on schools. The new monitoring locations will enable the council to determine the extent of exceedances at relevant locations at which monitoring has not previously been undertaken. The new monitoring locations will help to ensure that monitoring is completed around air quality focus areas and other key locations. This expanded monitoring network will allow the borough to prepare for re-assessment of the AQMA boundary in 2020.

1.2   Comparison of Monitoring Results with AQOs

The results presented are after adjustments for "annualisation" and for distance to a location of relevant public exposure, the details of which are described in Appendix A.

Table D.   Annual Mean NO$_2$ Ratified and Bias-adjusted Monitoring Results (μg m^{-3})

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (μg m^{-3})							
				2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2017 Distance Corrected
HF4	Automatic Roadside	99%	99%	No data	**92**	**76.2**	**80.3**	**76**	**78.9**	**77**	**65.7**
HF01	DT-Roadside	100%	92%	-	-	-	-	-	-	38.41	36.5
HF02	DT-Roadside	91%	83%	-	-	-	-	-	-	**48.72**	**43.0**
HF03	DT-Roadside	100%	92%	-	-	-	-	-	-	**89.32**	**69.0**
HF04	DT-Urban Background	91%	83%	-	-	-	-	-	-	30.74	N/A
HF05	DT-Roadside	100%	92%	-	-	-	-	-	-	**55.73**	**49.1**
HF06	DT-Roadside	100%	92%	-	-	-	-	-	-	**57.74**	**48.8**
HF07	DT-Roadside	100%	92%	-	-	-	-	-	-	**62.58**	**54.3**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})							
				2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2017 Distance Corrected
HF08	DT-Urban Background	91%	83%	-	-	-	-	-	-	28.64	N/A
HF09	DT-Roadside	91%	83%	-	-	-	-	-	-	**45.55**	**41.0**
HF10	DT-Roadside	100%	92%	-	-	-	-	-	-	36.67	35.3
HF11	DT-Roadside	91%	83%	-	-	-	-	-	-	**80.65**	**87.9**
HF12	DT-Roadside	100%	92%	-	-	-	-	-	-	35.11	34.3
HF13	DT-Roadside	91%	83%	-	-	-	-	-	-	**65.78**	**54.0**
HF14	DT-Roadside	100%	92%	-	-	-	-	-	-	**61.65**	**53.6**
HF15	DT-Roadside	100%	92%	-	-	-	-	-	-	36.00	34.9
HF16	DT-Roadside	100%	92%	-	-	-	-	-	-	**60.46**	**50.5**
HF17	DT-Roadside	100%	92%	-	-	-	-	-	-	**41.27**	38.3
HF18	DT-Roadside	72%	67%	-	-	-	-	-	-	**62.34 [c]**	**51.7**
HF19	DT-Roadside	100%	92%	-	-	-	-	-	-	**58.98**	**49.6**
HF20	DT-Urban Background	100%	92%	-	-	-	-	-	-	32.23	N/A
HF32	DT - Urban Roadside	100%	100%	**64**	**77**	**89.55**	**78.83**	**77.51**	**79.9**	**74.79**	**59.7**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})							
				2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2017 Distance Corrected
HF44	DT - Urban Background	100%	100%	26	35	37.89	29.61	28.48	32.70	32.73	N/A
HF45	DT - Urban Background	92%	92%	27	36	**42.60**	35.11	34.05	**39.63**	37.63	N/A
HF47	DT - Urban Roadside	100%	100%	35	**41**	**49.66**	**46.01**	**45.36**	**46.91**	**47.82**	**43.7**
HF48	DT-Urban Road-side	100%	100%	-	-	**50.47 c**	**49.08**	**44.47**	**52.28**	**45.96**	**42.3**
HF50	DT - Urban Roadside	100%	100%	<u>**61**</u>	<u>**71**</u>	<u>**75.34**</u>	<u>**64.97**</u>	<u>**60.26**</u>	<u>**68.28**</u>	**57.74**	**53.8**
HF53	DT - Urban Background	92%	92%	27	36	**41.61**	32.53	32.57	38.17	**43.14**	N/A
HF54	DT - Urban Roadside	100%	100%	**54**	<u>**77**</u>	<u>**98.42**</u>	<u>**80.67**</u>	<u>**76.58**</u>	<u>**84.25**</u>	<u>**78.85**</u>	<u>**67.2**</u>
HF60	DT - Urban Background	100%	100%	-	-	**42.80c**	39.24	37.60	**40.83**	**41.63**	N/A
HF61	DT - Urban Roadside	100%	100%	35	**43**	**50.10**	**45.81**	**45.90**	**49.39**	**43.69**	**40.7**
HF62	DT - Urban Background	100%	100%	-	-	34.69c	31.81	30.69	34.39	37.92	N/A
HF63	DT - Urban Roadside	100%	100%	**48**	**56**	<u>**65.16**</u>	**56.10**	**49.84**	**59.79**	**52.23**	**45.3**
HF64	DT - Urban Road-side	100%	50%	-	-	<u>**64.64c**</u>	**58.59**	**54.77**	**59.77**	**58.21c**	**44.8**
HF64	DT - Urban Road-side	83%	42%	-	-	-	-	-	-	<u>**60.35c**</u>	**51.8**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})							
				2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2017 Distance Corrected
HF65	DT - Urban Road-side	100%	100%	-	-	**<u>63.60c</u>**	**57.69**	**57.07**	**<u>68.57</u>**	**54.39**	**46.7**
HF66	DT - Urban Background	100%	100%	27	33	38.07	33.24	31.51	34.61	33.79	N/A

Notes: Exceedance of the NO$_2$ annual mean AQO of 40 µg m^{-3} are shown in **bold**.

NO$_2$ annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO^2 hourly mean AQS objective are shown in bold and underlined.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The Royal Borough of Kensington and Chelsea is a member of the London Wide Environment Programme (LWEP). Fully ratified data became available for all the monitoring sites included in the LWEP October 2018, and the final report was then published. Hammersmith and Fulham has subsequently revised its ASR to refect the final LWEP.

<u>Overview</u>

In 2017, background concentrations ranged between 28.64µg/m3 (HF8) and 43.14µg/m3 (HF53). Roadside concentrations ranged between 35.11µg/m3 (HF12) and 89.32 µg /m3 (HF03). The annual mean AQS objective was exceeded at two of the eight qualifying background monitoring sites and 23 out of 28 of the qualifying roadside sites. A total of 25 monitoring locations exceeded the annual mean AQS objective, this is an increase of 15 sites when compared to 2016 (an additional twenty monitoring sites qualified for analysis in 2017 compared to 2016). Of the four diffusion tube locations that were greater than 60 µg/m3 (indicative of exceedance of the hourly mean objective) in 2016, only two remain above 60 µg/m3 and both of those locations have seen reductions. Of the new tube locations, two is in exceedance of 60 µg/m3. Two of the locations are in Hammersmith Town Centre where a number of our emissions reducing actions are planned.

For those diffusion tube monitoring sites, where monitoring commenced before 2017 (15) there is no clear trend, for the last 3 years of monitoring several locations had lower results than 2016 but higher than 2015 for example. The results from the automatic monitor in the borough shows no clear trend the result for 2017 is lower than that for 2016 but higher than the result for 2015.

Table E. NO₂ Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % ᵃ	Valid data capture 2017 % ᵇ	Number of Hourly Means > 200 µg m⁻³						
			2011 ᶜ	2012 ᶜ	2013 ᶜ	2014 ᶜ	2015 ᶜ	2016 ᶜ	2017 ᶜ
HF4	99%	99%	No data	**74**	11(203.1)	0(179.1)	**19**	**33**	**20**

Notes: Exceedance of the NO₂ short term AQO of 200 µg m⁻³ over the permitted 18 days per year are shown in **bold**.
ᵃ data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
ᵇ data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
ᶜ Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Overview
The results do not show a clear trend, the results are lower than for 2016 but higher than 2015, similar to the annual result for the automatic monitor.

Table F. Annual Mean PM₁₀ Automatic Monitoring Results (µg m⁻³)

Site ID	Valid data capture for monitoring period % ᵃ	Valid data capture 2017 % ᵇ	Annual Mean Concentration (µg m⁻³)						
			2011 ᶜ	2012 ᶜ	2013 ᶜ	2014 ᶜ	2015 ᶜ	2016 ᶜ	2017 ᶜ
HF4	98%	9%	No data	38	36.4	26.5	25	27.4	28

Notes: Exceedance of the PM₁₀ annual mean AQO of 40 µg m⁻³ are shown in **bold**.
ᵃ data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
ᵇ data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
ᶜ Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%
Overview
The results show that there has been a slight increase in 2017 on 2014, 2015 and 2016 results, the council is not aware of any factors that would have led to this increase.

Table G.   PM$_{10}$ Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2011	**2012**	**2013** [c]	**2014** [c]	**2015**	**2016**	**2017** [c]
HF4	*98%*	*98%*	No data	67	33 (59.5)	0 (38.2)	10	17	14

Notes: Exceedance of the PM$_{10}$ short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**.

Where the period of valid data is less than 85% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Overview

Daily means were reduced on 2016 values but show an increase from 2015, there is no clear trend in results.

2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table J provides a brief summary of Hammersmith &Fulham Council 's progress against the Air Quality Action Plan, showing progress made this year.

Table J. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
Reducing Emissions at its source	*1. Encourage improved availability of alternative fuels*	a) The council has 130 on street electric charging points. This represents a significant increase on the 39 reported in the 2016 ASR. b) Development control requires that all new developments providing off street parking provide a minimum of 25% active and 25% passive EV charging points. This has increased from the 20% active and 20% passive reported in the 2016 ASR.
Reducing Emissions at its source	*2. Provide incentives for use of alternative fuels*	The council in coordination with resident groups reviewed the existing parking permit policies. The council intended to launch a free parking permit for fully electric vehicles in 2017. Implementation of changes have been delayed due to changes in IT systems. Implementation is now expected in 2018.
Reducing Emissions at its source	*3. Promote travel plans to encourage a switch to low emission vehicles*	Workplace and school travel plans continue to be conditioned as part of the planning process. Westtrans monitoring officer continues to work one day a week to ensure work travel plan conditions are being complied with.

Measure	Action	Progress
		- Emissions/Concentration data - Benefits - Negative impacts / Complaints
Reducing Emissions at its source	*4. Reduce emissions from the council fleet*	The council worked with Westtrans on a Freight Strategy for the Westtrans area, which was adopted in 2016. Implementation of the freight strategy is underway in Hammersmith & Fulham.Westtrans are working with the King Street shopping centre to help it implement and monitor a Delivery and Servicing Plan – to reduce/make more efficient goods deliveries to the centre. Work is underway to identify the delivery intensive areas for unloading and loading to see what measures could be used to make improvements. Westtrans is seeking permission to trial a night freight scheme, hopefully moving some HGVs off the am peak. The Mayor's car was upgraded in 2017 from a diesel to a fully electric vehicle. Council offer monthly 'Dr Bike' sessions for staff to encourage cycling which are well attended. Mayor's cycle hire pool access for council staff also made available. Council is in the initial stages of development of a green fleet strategy which focusses on reducing air pollution tailpipe emissions as well as greenhouse gases. The council is a member of the Low Emissions Logistics project. One of the project's aims is to produce a low emissions procurement toolkit in Spring 2018 that can be utilised by council departments. Additionally, an Air Quality Information Sheet has been produced for businesses in Hammersmith and Fulham Business Improvement District. The current heavy goods fleet on the Serco contract are London Low Emissions compliant with a minimum of Euro 5 engines and Eminox exhaust systems fitted. 5 new Refuse Collection Vehicles are Euro 6 engines and exceed the emission scheme. There are 2 x electric 3.5t cage vehicles which are operated at night and early mornings to help reduce

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		noise pollution. The mechanical Scarab sweeping fleet have all been replaced with Euro 6 engines '15 plate vehicles 3 x 7.5tonne cage vehicles have been replaced with new Mitsubishi Canter Hybrid vehicles. The oldest vehicles remaining on the fleet are the refuse collection '58 plate vehicles which have been undergoing a refurbishment programme to ensure that they are appearing neatly and will last for a further 5 years. As previously stated they are all Euro 5 and Eminox exhaust fitted. The vehicle work has been completed.
Reducing Emissions at its source	*5. Seek a reduction in emissions from the bus fleet*	TfL has increased the proportion of the fleet that is at the Euro VI emission standard to 4,000 vehicles out of 9,000 (44 per cent). Every bus that is retrofitted up to this standard (or replaced with a new bus that already meets it immediately reduces its NOx exhaust and particulate matter emissions by up to 95 and 80 per cent respectively. All of the fleet will be brought up to at least this standard by 2020, and as the proportion grows all boroughs will benefit. Any double deck buses on routes that go into Ultra Low Emission Zone from LB Hammersmith & Fulham will need to be Euro VI by 2019. Please also see response to action 7. The council supports the principle of the ULEZ and seeks its extension and early implementation, this would tighten the standards on buses in the borough.
Reducing Emissions at	*6. Encourage the use of vehicles with smaller, more efficient*	The council in coordination with resident groups reviewed the existing parking permit policies. The council intended to launch a free parking permit for fully electric vehicles in 2017. Implementation of

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
its source	*engines*	changes have been delayed due to changes in IT systems. Implementation is now expected in 2018.
Reducing Emissions at its source	*7. Seek to reduce emissions from larger vehicles (Low Emission Zone)*	The council supports the principal of the ULEZ and seeks its extension and early implementation, this was reflected in the response to the ULEZ consultation 30th November 2017 which sought views detailed proposals for two further initiatives to improve London's air.: • Tightening the standards of the existing London-wide Low Emission Zone from 2020, which affects heavy vehicles – buses, coaches and HGVs and other heavy specialist vehicles • Expanding the ULEZ for light vehicles (cars, vans and motorcycles) from central London to inner London up to, but not including the North and South Circular roads in 2021 so that all vehicles in this area are subject to emissions standards
Reducing Emissions at its source	*8. Seek to reduce emissions from badly maintained vehicles*	No emissions test have been conducted. The council's fleet is kept well maintained.
Reducing Emissions at its source	*9. Encourage more environmentally friendly driving behaviour*	20 mph limit introduced September 2016 and confirmed as permanent September 2017. This decision is detailed at http://democracy.lbhf.gov.uk/ieDecisionDetails.aspx?ID=3329 The Environmental Quaity Team in conjunction with Green Gumption organised three vehicle idling action days 2017/2018, two were completed at schools and one together with Hammersmith Business Improvement District (BID). More than 68 members of the public were approached across the events.
Reducing Emissions at	*10. Seek a reduction in emissions of small particles from*	a) Complaints of dust nuisance investigated as and when reported. 36 complaints were received 2017/2018 about construction / demolition dust. Informal warning/advice is usually effective in

Measure	Action	Progress
		- Emissions/Concentration data - Benefits - Negative impacts / Complaints
its source	*construction sites*	securing improvements. b) We continue to require demolition and construction management plans for major development sites, including the submission of a AQDMP (Air Quality Demolition Management Plan) that includes a dust risk assessment as well as measures to minimise dust emissions and are required to follow the London Mayor's "The Control of Dust and Emissions During Construction and Demolition SPG, 2014.' This includes the requirements to meet NRMM criteria.
Reducing Emissions at its source	*11. Seek a reduction in emissions from domestic and commercial properties*	From April 2017 there have been 36 complaints about smoke from commercial/domestic properties, including from bonfires, these were addressed by the council's Environmental Health team. Corporate Property Services have a draft new Corporate Assets Environmental Sustainability Framework (CAESF), which focuses predominantly on reducing the energy demand of LBHF buildings without compromising thermal comfort, air quality or ambient lighting levels. The aim of the framework will be to achieve recognisable energy and sustainability improvements which can be demonstrated in DEC, EPC and provisional BREEAM In-Use (BIU) ratings and accreditation. The BIU methodology will be used to assess buildings across 5 key categories which may overlap with current work-streams carried out by other departments and teams. The CAESF, once agreed and approved by CPS, will become effective from the new financial year onwards and run for a 5-year period 2018 to 2023. It will take into account changes to LBHF's "retained estate" as the redevelopment and regeneration of the Town Hall and adjacent areas proceeds. The CAESF be accompanied by an Action Plan which will be updated regularly as a rolling program of improvement works and actions to increase energy efficiency and improve building performance of the CPS property portfolio. It will take into account the changing nature of the council's property estate i.e. disposals/acquisitions/refurbishments etc, and the potential to use

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		smart/renewable technologies, natural resources and energy storage options when building demands have been minimised. Additional positive measures undertaken by the council include that in total 82.80 tonnes of Christmas trees were composted in 2017 (into early 2018) in Hammersmith and Fulham. Reductions in emissions from residential and commercial premises are partly achieved through the planning system where heat and energy sources can be controlled. Further information on relevant progress is reported below against action 14. We also work with businesses through the Clean Air Better Business Project and the Low Emissions Logistic Project encouraging them to take steps to reduce emissions; more details provided in action 22.
Reducing Emissions at its source	*12. Seek to control and minimise emissions from industrial premises*	Regulation duties continued in line with the LAPPC requirements. No complaints were received in 2017/2018 regarding emissions from industrial sites regulated by the council. No notices were served. Routine inspections also undertaken to ensure compliance with permits.
Reducing the Need to Travel	*13. Sustain and improve town & local centres, facilities and employment areas*	The council's new Local Plan was adopted on 28th February 2018. As previously reported, the Local Plan sets out the vision, objectives and detailed spatial strategy for future development in Hammersmith and Fulham for the next 15-20 years along with specific development management policies. It includes the identification of four key regeneration areas, strategic sites for development and options for policies on topics such as transport, town centres, the local economy and environmental issues. One of the Plan's Strategic Objectives is to regenerate the borough's town centres by improving their viability and vitality and promoting a network of supporting key local centres providing local services.

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		Policy E1 promotes the provision of a range of employment uses and identifies that the borough's 3 town centres and White City and Earls Court regeneration areas will be the preferred locations for large office developments. Policy TLC1 supports the regeneration of the town centres for a mix of town centre uses
Reducing the Need to Travel	*14. Seek to reduce the air quality impact of new development*	In 2017 the following number of sites were required to implement air quality mitigation via the development control process: 249 development sites with Mechanical Ventilation to reduce indoor exposure to poor air quality, 278 sites with Ultra Low NOx Boilers, 19 sites with higher CHP emission standards, 107 sites with Air Quality Dust Management Plan (AQDMP) with stage IIIB NRMM emission standards (instead of the standard Stage IIIA greater London requirement), 87 sites with Low Emission Strategies, 9 sites with higher diesel emergency generator emission standards. The Local Plan was adopted on the 28th February 2018 and has replaced the Core Strategy 2011 and Development Management Local Plan 2013 documents as the basis for planning decisions and future development in the borough. The wording of our air quality policy within the newly approved Local Plan, was amended from the previous air quality policy in order to include all developments that have the potential to impact or be impacted by poor local air quality (previously restricted to major developments). The basis of a number of transport policies has had air quality woven into its purpose in the newly approved Local plan. Our Supplementary Planning Guidance was also reviewed to imbed the importance of air quality into it; this was adopted in February 2018 Construction logistics plans are required on most developments which require details on how delivery hours will be managed to reduce impact and the need for stationary vehicles and potential idling

Measure	Action	Progress
		- Emissions/Concentration data - Benefits - Negative impacts / Complaints
Encouraging a Switch to Less Polluting Forms of Transport	*15. Promotion of bus services*	There were no major changes to the LBHF bus network in 2017/18 other than temporary changes made in relation to weight restrictions on Hammersmith Bridge.
Encouraging a Switch to Less Polluting Forms of Transport	*16. Promotion of other forms of public transport*	We are co-operating with TfL in the introduction of low emission bus corridors in King Street and Hammersmith Road and Uxbridge Road.
Encouraging a Switch to Less Polluting Forms of Transport	*17. Promotion of cycling*	The following improvements for cycling have been made 2017/2018 Two new Tiger crossings have been installed in the Borough, one on Scrubs Lane adjacent to Mitre Way, and one on Du Cane Road adjacent to Fitzneal Street. Quietway 2 is now substantially complete from its start at Du Cane Road alongside Wormwood Scrubs to Mitre Way. This is a 2.3km length of 3m wide cycle route including 'Flexi-pave' surfacing. On street cycle parking has been increased. We have installed a total of 55 Cycle Hoops as part of new Highway and Developer schemes and an additional 31 Cycle Hoops have been installed as a result of a Resident requests.

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
Encouraging a Switch to Less Polluting Forms of Transport	*18. Promotion of Walking*	In September 2017, the Cabinet approved making the 20 mph speed limit Traffic Regulation permanent. Supporting measures to improve speed compliance and to address residents' concerns in relation to traffic volumes were carried out in the following roads:- Sulgrave Road, Lena Gardens, Batoum Gardens, Boscombe Road, Hartswood Road, Ellerslie Road, Chaldon Road, Benbow Road, Waterford Road, Broomhouse Road, Hurlingham Road and Imperial Road. A community initiative – "Community Road Watch" was also supported to address speeding issues, Two new zebra crossings were introduced in Carnwath Road and improvements made to a number of other zebra sites such as Hugon Road and Stephendale Road.
Encouraging a Switch to Less Polluting Forms of Transport	*19. Encourage a reduction in car use for the journey to school*	Of the 80 schools in the Borough, 71 have undertaken their whole school travel surveys within the last 2 years, and under the TfL STARS (Sustainable Travel: Active Responsible Safe) accreditation scheme, the following levels were awarded in September 2017: • 12 engaged • 45 Bronze • 2 Silver • 4 Gold The council took part in school air quality audits in 2 schools, St Pauls CofE Primary School and Melcombe Primary School. Air Quality and School Travel Officers provided input to the process including attending the audit and working with the specialist consultants and school officials. Air Quality and School Travel Officer attended 10 Urbanwise sessions in 2017 calendar year for

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		Hammersmith and Fulham, these teaching sessions explore air quality, road safety and active travel themes with primary school children in the borough and work to encourage children to travel on foot/ scooter/bike to school.
Encouraging a Switch to Less Polluting Forms of Transport	*20. Encourage a reduction in car use for the journey to work and business trips*	Workplace travel plans continue to be conditioned for any new developments. Workplace travel plans promoted as part of the Healthy Workplace Charter Programme by council's Healthy workplace business advisor. If the workplace was a school this was refered to the Hammersmith and Fulham School Travel Advisor (five). One business developed a workplace travel plan as part of this programme which was not obliged to have workplace travel plan for planning condition.
Encouraging a Switch to Less Polluting Forms of Transport	*21. Control provision of on and off street parking to deter car commuting into and within the borough*	Work continues on introduction of parking controls on housing estates to remove availability of uncontrolled publicly accessible urban parking areas. Controlled parking has now been implemented on 32 housing estate, Including the largest ones.
Encouraging a Switch to Less Polluting Forms of Transport	*22. Encourage freight to be transported in a sustainable manner*	In October 2017, Cross River Partnership (CRP) was appointed as the business engagement partner for the Low Emission Logistics (LEL) project funded by the Mayor's Air Quality Fund (MAQF). This project engages with businesses to address air pollution and congestion stemming from their deliveries and servicing vehicles. The Hammersmith Business Improvement District (BID), based around Hammersmith town centre including two shopping malls and the Lyric theatre, participate in this project. A bespoke online business engagement survey to be used to collect baseline data from businesses and organisations in the Hammersmith BID area was sent at the beginning of December 2017. The survey collected information on delivery and survey patterns as well as identifying existing

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		good practice by businesses and assessing the potential for future interventions. Only one response was received and no locally tailored recommendations could be made. However an Air Quality Infosheet has been produced as part of this LEL project which will serve as an introduction for local businesses in respect to impact of vehicle deliveries and servicing on local air quality and to facilitate future work that the Council and Hammersmith BID are undertaking to engage with these businesses. The Hammersmith & Fulham Air Quality Infosheet covers cleaner, greener vehicles; streamlining suppliers; redirecting personal deliveries; joint procurement; reducing and retiming deliveries; as well as reducing waste collections. We are working with the Clean Air Better Business (CABB) project funded by the Mayor's Air Quality Fund (MAQF) which is implemented by the Cross River Partnership (CRP) who actively approach and engage with businesses within the borough to improve air quality by: • Making deliveries to businesses more efficient, reducing congestion and air pollution while saving time and money via the deliverBEST online tool and business support service; • Addressing the air quality impact of online shopping and personal deliveries via the 'Click. Collect. Clean Air' behaviour change campaign; • Communicating air quality messages with the business community. • Delivery and Servicing Plans for businesses to rationalize movements, reduce traffic and congestion and achieve time, cost and emissions savings; • Travel to work plans – to make travel to work more sustainable; • A directory of suppliers using zero and low emission (ZLE) vehicles – to enable businesses to choose to use ZLE vehicles providers/services;

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
		• Promotion of zero and low emission vehicles to businesses, the public sector and the taxi and private hire industries We are also working with the Hammersmith BID and Westtrans to introduce a scheme in Hammersmith Town Centre and the Kings Mall shopping centre. It was announced this year that Westminster City Council ((Cross River Partnership) with Lambeth, Islington, Kensington & Chelsea, Hammersmith & Fulham, Lewisham) were successful in their 2017 application to the Defra Clean Air Fund for funding to work with businesses across 5 boroughs to help reduce their emissions. In LBHF this work will concentrate on 2 areas: Fulham Town Centre – GLA AQ Focus Area 73 and Shepherds Bush - GLA AQ Focus Area 75.
Make a More Efficient Use of Road Transport	23. Encourage car sharing	We have been actively working with two car club operators, Zipcar and City Car Club to expand their existing on-street network, there are currently 49 bays. There are 129 Electric Vehicle bays (February 2018).
Make a More Efficient Use of Road Transport	24. Discourage short journeys	Seven Controlled Parking Zones reviewed and controls strengthened in those zones where residents voted for this. Sub zones created where vote is split.
Other Measures	25. Reduce the amount of road traffic in residential areas and	Two consultations were undertaken to close two well know rat runs; Effie Road and Bishops King Road. These were implemented in 2017. Bishops King Road Scheme detailed at

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
to Reduce Road Traffic Emissions	*town centres*	https://www.lbhf.gov.uk/articles/news/2017/12/rat-running-west-kensington-road-banned-following-residents-concerns. Phase 1 of Hammersmith Grove south low/zero emission zone underway to be completed June 2018: Hammersmith Grove Zero Emission Zone Phase 1 redesigns the section of Hammersmith Grove between Glenthorne Road and Beadon Road. This will reduce the dominance of motor traffic and improve the environment for pedestrians and cyclists through green parklets with seating, planting and cycling stands, dockless cycle hire parking, improved crossings and electric vehicle charging points and bays to encourage the use of ULEVs. The Council also work to implement the Clean Air Better Business and Low Emissions Logistics MAQF projects in town centres which aim to reduce road traffic through active travel plans and improved freight and other transport logistics. More details on this may be found against Action 22. The council worked with Hammersmith Business Improvement District to apply for funding for a Business Low Emission Neighbourhood. Funding was secured in 2017 for delivery by April 2019. Hammersmith Business Improvement District will deliver a project around the Hammersmith Flyover working closely with local organisations such as the Lyric Theatre, who have offered free space for events and workshops. The project will deliver a secure hub for people to store their bikes, and a host of greening and other improvements to the urban realm such as a green wall to help transform some of the grey car-dominated parts of this busy destination. The project will also consider consolidation of deliveries.
Other Measures to Reduce Road Traffic	***26. Promote the use of trees to help improve local air quality***	In the Council's Parks and cemeteries approximately 600 hundred trees were planted in the last year. In 2017/18 the council planted 54 new street trees and 215 replacement street trees. 11 replacement

Measure	Action	Progress
		• Emissions/Concentration data • Benefits • Negative impacts / Complaints
Emissions		trees were planted by the council's Arboricultural team on Housing estates
Other Measures to Reduce Road Traffic Emissions	**27. Reduce the amount of traffic on the A4 and A40**	We don't control traffic on the A4 or A40 as these are TfL's roads. We continue to lobby them for the Hammersmith flyunder and the Mayor's draft Transport Strategy (MTS3) aims to increase the proportion of trips made by walking, cycling and public transport from 64% to 80%.
Raise Awareness of the Links Between Air Quality and Health	**28. Provide information to allow people to make informed choices about travel behaviour**	There were 14 additional subscribers from April 2017 for AirTEXT pollution alerts relating to LBHF. The majority of these subscribers receive alerts by text message (174 people) and 30 receive voice alerts. AirTEXT and the clean air route planner Walkit are promoted on our website.
Raise Awareness of the Links Between Air Quality and Health	**29. Provide information so people can make informed choices about reducing pollution from domestic activities**	No new publicity material produced by council. The Council continue to respond to enquiries on the use of approved appliances and steer the public to available resources such as GLA guidance on wood burning stoves and list of EcoDesign Ready stoves https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/guidance-wood-burning-stoves-london
Raise Awareness of the Links Between Air	**30. Continue to monitor air quality and make info. available**	Real time monitoring at Shepherds Bush Green of NO_2 and PM10 continue. Data is available to view at Air Quality England. Significant increase in number of diffusion tubes in 2017/2018. Reports on air quality results and links to real time monitoring data are provided on our Council

Measure	Action	Progress
		- Emissions/Concentration data - Benefits - Negative impacts / Complaints
Quality and Health		website.

3. Planning Update and Other New Sources of Emissions

Table K. Planning requirements met by planning applications in *Hammersmith and Fulham* in 2017

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	296
Number of planning applications required to monitor for construction dust	105
Number of CHPs/Biomass boilers refused on air quality grounds	0
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	18
Number of developments required to install Ultra-Low NO_x boilers	280
Number of developments where an AQ Neutral building and/or transport assessments undertaken	24
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	24
Number of planning applications with S106 agreements including other requirements to improve air quality	0
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	N/A
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	*101 conditions included (planning condition is for the more stringent plant limits set for CAZ and Canary Wharf)* *14 registered and compliant (7 of these were self compliant and 7 required recommendations/ advice to become compliant)* *7 unregistered/uncompliant and being chased.*

3.1 New or significantly changed industrial or other sources

No new sources identified.

Appendix A   Details of Monitoring Site QA/QC

A.1   Automatic Monitoring Sites

Data management and Local Site Operator duties for the council's automatic monitoring station werecompleted by a contractor, the Environmental Research Group at King's College London until November 2017. Following a procurement process, these duties were taken over by an alternative contractor, Ricardo AEA.

All real-time data from the monitoring station is independently collected and validated on a daily basis. A combination of automatic and manual checks is used to assess data, identify and diagnose potential equipment faults and adjust data to take account of calibration tests. Automatic overnight calibrations are supplemented with regular manual calibrations of analysers. The procedures used conform to the requirements of the UK Automatic Urban and Rural Network Management and Coordination Units.

All data is also formally ratified. During this process the validation decisions can be ratified with the benefit of hindsight and using greater information, such as service records, calibration records and the results of station audits. Station audits were carried out every 6 months by the National Physical Laboratory, which is UKAS (United Kingdom Accreditation Service) accredited (when King's college was the contractor). The Station Audits are now carried out by Ricardo AEA in house audit team.

PM$_{10}$ Monitoring Adjustment

All PM10 data presented in this report have been corrected to gravimetric equivalent using the Volatile Correction Model.

A.2   Diffusion Tube Quality Assurance / Quality Control

Diffusion tube analysis is carried out in Gradko's UKAS accredited laboratory. They use a 50% in Acetone preparation method. Their limit of detection is 0.066µg NO2. Laboratory preparation and analysis of the tubes is strictly controlled and Gradko participate in 2 major independent schemes to assess their performance.

1) Workplace Analysis Scheme for Proficiency (WASP) and AIR PT
Gradko participates in the AIR proficiency testing for NO$_2$ diffusion tube scheme on a quarterly basis. AIR PT is a new scheme, started in April 2014, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT has combined two long running proficiency testing schemes LGC Standards. STACKS PT scheme and HSL WASP PT scheme. AIR is a recognised performance-testing programme for labs undertaking NO$_2$ diffusion tube analysis as part of the UK NO$_2$ monitoring network. Further information on proficiency testing can be found at Defra's Local Air Quality Management webpages.

Table A2.1   Laboratory Summary Performance for AIR NO2 PT Rounds 18, 19, 21 and 22 2017

AIR PT AR012	AIR PT AR013	AIR PT AR015	AIR PT AR016
January – February 2017	April – May 2017	July – August 2017	September – October 2017
100%	100%	100%	100%

2) Network Field Inter-Comparison Exercise

This exercise is operated by the National Physical Laboratory (NPL) and tests the performance of the diffusion tubes and lab analysis procedures and involves the regular exposure of a triplet of tubes at an Automatic Urban Network (AUN) site where real-time NO_2 levels are also measured using a chemiluminescent analyser.

Gradko operates well within the required level of performance in terms of accuracy and precision, as shown by the results below. The NPL performance criterion for precision is that the mean coefficient of variation for the full year should not exceed 10%, should this be achieved the precision is given a score of 'good'.

Annual Mean Bias
Performance Target: **+25%**
Gradko Annual Mean Bias: **+6%**

Precision
Performance Target: **10%**
Gradko Precision: **Good**

Gradko International Ltd performs blank exposures that serve as a quality control check on the tube preparation procedure

A.3   Adjustments to the Ratified Monitoring Data

Factor from Local Co-location Studies (if available)

Bureau Veritas conducts an 'in-house' co-location study to establish a London Wide Environment Programme (LWEP) bias-adjustment factor based on triplicate NO2 diffusion tubes located with a continuous analyser, for a number of local authorities. The council does not have any NO_2 diffusion tubes co-located with its real-time monitoring station. However a local bias adjustment factor calculated using data from the Royal Borough of Kensington and Chelsea AURN affiliated site at North Kensington was chosen to be used rather than the National Bias Adjustment Factor.

Table A2.2   Bias Adjustment Factor and % Bias of LWEP Co-Location Study 2017

		Diffusion Tube	Continuous Analyser	Correction Factor (A)	% Bias based on continuous monitor (B)
Kensington	North Kensington	29.0	32.7	1.18	-15
Kensington	Cromwell Road	59.9	50.5	0.86	17
LWEP	Bloomsbury	40.4	37.9	0.94	7
Croydon	Park Lane	50.6	45.8	0.91	10
Croydon	London Road	51.5	43.4	0.84	19

		Diffusion Tube	Continuous Analyser	Correction Factor (A)	% Bias based on continuous monitor (B)
Greenwich	Eltham	20.4	19.8	0.97	3
Greenwich	Blackheath	44.0	38.7	0.88	14
Greenwich	Westthorne Av	40.0	39.2	0.98	2
Greenwich	Burrage	33.2	35.9	1.08	-8
Greenwich	Woolwich Flyover	74.2	66.0	0.89	13
Greenwich	Bexley Falconwood	47.5	40.6	0.85	17
Overall % Bias					**7.18**
Overall Bias Adjustment Factor				**0.93**	

Table A2.3 - Bias Adjustment Factors (BAF) used by LBHF 2009-2017

Year	BAF
2009	0.92
2010	0.93
2011	0.94
2012	1.01
2013	1.14
2014	1.03
2015	1.07
2016	1.15
2017	1.18

Discussion of Choice of Factor to Use

Distance Adjustment

Where an exceedance has been measured at a monitoring site which is not representative of public exposure, the procedure specified in LLAQM.TG(16) has been used to estimate the concentration at the nearest receptor.

Please see below calculations:

Site Name/ID	Distance (m)			NO₂ Annual Mean Concentration (µg/m³)		Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
HF4	2.0	6.0	33.0	**77.0**	<u>**65.7**</u>	Predicted concentration at Receptor above AQS objective.
HF48	1.0	4.0	33.0	46.0	**42.3**	Predicted concentration at Receptor above AQS objective.
HF50	4.4	7.7	33.0	57.7	**53.8**	Predicted concentration at Receptor above AQS objective.
HF54	3.0	8.0	33.0	78.9	<u>**67.2**</u>	Predicted concentration at Receptor above AQS objective.
HF61	1.0	4.0	33.0	43.7	**40.7**	Predicted concentration at Receptor above AQS objective.
HF63	1.0	6.0	33.0	52.2	**45.3**	Predicted concentration at Receptor above AQS objective.
HF64a	1.0	14.0	33.0	58.2	**44.8**	Predicted concentration at Receptor above AQS objective.
HF65	1.0	6.0	33.0	54.4	**46.7**	Predicted concentration at Receptor above AQS objective.
HF64b	1.0	4.7	33.0	60.4	**51.8**	Predicted concentration at Receptor above AQS objective.

Enter data into the pink cells

HF01	1.0	6.0	33.0	38.4	*36.5*	Predicted concentration at Receptor within 10% the AQS objective.
HF02	1.0	6.0	33.0	48.7	**43.0**	Predicted concentration at Receptor above AQS objective.
HF03	1.0	6.0	33.0	89.3	<u>**69.0**</u>	Predicted concentration at Receptor above AQS objective.
HF05	2.0	7.0	33.0	55.7	**49.1**	Predicted concentration at Receptor above AQS objective.
HF06	1.0	6.0	33.0	57.7	**48.8**	Predicted concentration at Receptor above AQS objective.
HF07	1.0	4.0	33.0	62.6	**54.3**	Predicted concentration at Receptor above AQS objective.
HF09	1.0	6.0	33.0	45.6	**41.0**	Predicted concentration at Receptor above AQS objective.
HF10	1.0	6.0	33.0	36.7	35.3	
HF11	5.0	3.0	33.0	80.7	<u>**87.9**</u>	Predicted concentration at Receptor above AQS objective.
HF12	1.0	6.0	33.0	35.1	34.3	
HF13	3.0	12.0	33.0	65.8	**54.0**	Predicted concentration at Receptor above AQS objective.
HF14	1.0	4.0	33.0	61.7	**53.6**	Predicted concentration at Receptor above AQS objective.
HF15	1.0	6.0	33.0	36.0	34.9	
HF16	1.0	6.0	33.0	60.5	**50.5**	Predicted concentration at Receptor above AQS objective.

HF17	1.0	6.0	33.0	41.3	*38.3*	Predicted concentration at Receptor within 10% the AQS objective.
HF18	1.0	6.0	33.0	62.3	**51.7**	Predicted concentration at Receptor above AQS objective.
HF19	1.0	6.0	33.0	59.0	**49.6**	Predicted concentration at Receptor above AQS objective.
HF32	1.0	6.0	33.0	74.8	<u>**59.7**</u>	Predicted concentration at Receptor above AQS objective.
HF47	1.0	4.0	33.0	47.8	**43.7**	Predicted concentration at Receptor above AQS objective.

Short-term to Long-term Data Adjustment

Where data capture is less than 75% of a full calendar year (less than 9 months), the mean has been "annualised" – i.e. adjusted using the methodology outlined in LLAQM.TG(16) before being compared to annual mean objectives.

Table L: Short-term to Long-term Data Adjustment HF18

	Start Date	End Date (UP UNTIL)	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
January	3rd January 2017	31st January 2017	62.30				
February	31st January 2017	28th February 2017	36.88	36.88	40.69	40.69	64.20
March	28th February 2017	28th March 2017	30.81	30.81	47.35	47.35	62.47
April	28th March 2017	25th April 2017	28.31	28.31	44.38	44.38	43.81
May	25th April 2017	30th May 2017	29.25	29.25	41.32	41.32	51.68
June	30th May 2017	27th June 2017	22.38	22.38	27.66	27.66	51.97
July	27th June 2017	1st August 2017	20.73		24.80		
August	1st August 2017	31st August	25.99	25.99	22.43	22.43	43.69

	Start Date	End Date (UP UNTIL)	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
		2017					
September	31st August 2017	25th September 2017	27.90		29.18		
October	25th September 2017	31st october 2017	30.80		32.13		
November	31st october 2017	5th December 2017	42.14	42.14	45.11	45.11	54.83
December	5th December	2ndJanuary 2018	36.61	36.61	36.95	36.95	55.72
		annual mean 2017	32.84	31.55	35.63	38.23	53.55
							measured mean * annualisation factor
				Ratio AM/PM		Ratio AM/PM	52.83
				1.04		0.93	
				AVERAGE RATIO AM/PM			
				0.99	annualisation factor		

Annualisation has been completed for HF64 Tube as the location of this tube was amended after July 2017. Six months of monitoring was completed at each location; the first six is referred to as HF64a and the second six as HF64b.

Table M: Short-term to Long-term Data Adjustment HF64a

	Start Date	End Date (UP UNTIL)	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
January	3rd January 2017	31st January 2017	62.30	62.30			75.05
February	31st January	28th February	36.88	36.88	40.69	40.69	51.84

	Start Date 2017	End Date (UP UNTIL) 2017	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
March	28th February 2017	28th March 2017	30.81	30.81	47.35	47.35	54.25
April	28th March 2017	25th April 2017	28.31	28.31	44.38	44.38	51.39
May	25th April 2017	30th May 2017	29.25	29.25	41.32	41.32	44.38
June	30th May 2017	27th June 2017	22.38	22.38	27.66	27.66	47.77
July	27th June 2017	1st August 2017	20.73		24.80		
August	1st August 2017	31st August 2017	25.99		22.43		
September	31st August 2017	25th September 2017	27.90		29.18		
October	25th September 2017	31st october 2017	30.80		32.13		
November	31st october 2017	5th December 2017	42.14		45.11		
December	5th December	2ndJanuary 2018	36.61		36.95		
		annual mean 2017	32.84	34.99	35.63	40.28	54.11
							measured mean * annualisation factor
				Ratio AM/PM		Ratio AM/PM	49.33
				0.94		0.88	
				AVERAGE RATIO AM/PM			
				0.91	annualisation factor		

Table N: Short-term to Long-term Data Adjustment HF64b

	Start Date	End Date (UP UNTIL)	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
January	3rd January 2017	31st January 2017	62.30				
February	31st January 2017	28th February 2017	36.88		40.69		
March	28th February 2017	28th March 2017	30.81		47.35		
April	28th March 2017	25th April 2017	28.31		44.38		
May	25th April 2017	30th May 2017	29.25		41.32		
June	30th May 2017	27th June 2017	22.38		27.66		
July	27th June 2017	1st August 2017	20.73	20.73	24.80	24.80	46.50
August	1st August 2017	30th August 2017	25.66	25.66	22.43	22.43	43.73
September	30th August 2017	25th September 2017	28.19	28.19	29.18	29.18	50.48
October	25th September 2017	31st october 2017	30.80	30.80	32.13	32.13	45.96
November	31st october 2017	5th December 2017	42.14	42.14	45.11	45.11	
December	5th December	2ndJanuary 2018	36.61	36.61	36.95	36.95	41.91
		annual mean 2017	32.84	30.69	35.63	31.77	46.67
							measured mean * annualisation factor
			Ratio AM/PM			Ratio AM/PM	51.14
				1.07		1.12	
			AVERAGE RATIO AM/PM				

	Start Date	End Date (UP UNTIL)	Background site (North Kensington) Am	Background site (North Kensington) Pm	Background site (Westminster-Horseferry Road) Am	Background site (Westminster-Horseferry Road) Pm	Diffusion Tube Site
				1.10	annualisation factor		

Distance Adjustment

If an exceedance is measured at a monitoring site which is not representative of public exposure, the procedure specified in LLAQM.TG(16) to estimate the concentration at the nearest receptor has been used.

Appendix B Full Monthly Diffusion Tube Results for 2017

Table O. NO$_2$ Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data [c]	Annual mean – bias adjusted [c]
			Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
HF01	100%	92%		38.17	32.92	**48.29**	26.43	25.30	25.34	25.42	29.51	29.37	**41.63**	35.67	32.55	38.41
HF02	91%	83%		**47.80**	**45.91**	29.05	Tube Missing	**40.52**	39.57	**44.88**	**45.46**	11.26	**57.55***	**50.89**	**41.29**	**48.72**
HF03	100%	92%		**84.42**	**77.49**	**53.73**	**70.99**	**77.93**	**81.30**	**80.07**	**86.00**	**75.28***	**79.35***	**66.12***	**75.70**	**89.32**
HF04	91%	83%		32.92	27.04	Tube Missing	24.28	21.72	19.24	18.52	25.31	25.63	36.12	29.70	26.05	30.74
HF05	100%	92%		**55.15**	**47.85**	25.41	**49.42**	**50.18**	**47.98**	**47.29**	**47.45**	**51.77***	**51.85***	**45.18**	**47.23**	**55.73**
HF06	100%	92%		**53.57**	**51.06**	**54.43**	**47.06**	**46.72**	**45.06**	**44.17**	**42.12**	**49.27***	**54.46***	**50.31**	**48.93**	**57.74**
HF07	100%	92%		**63.11**	59.39	20.21	**56.46**	**48.85**	**54.60**	**51.74**	**54.42**	**54.43***	**65.63***	**54.57**	**53.04**	**62.58**
HF08	91%	83%		Tube Missing	26.06	27.45	21.99	17.33	18.34	19.16	23.44	24.56	35.00	29.40	24.27	28.64
HF09	91%	83%		**46.93**	38.59	33.65	39.88	33.67	32.38	36.83	**40.17**	Tube Missing	**43.41**	**40.51**	38.60	**45.55**
HF10	100%	92%		38.97	35.44	30.27	27.65	24.98	24.30	22.80	25.58	32.02	41.85	37.97	31.08	36.67

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2017 %[b]	Annual Mean NO$_2$												Annual mean – raw data [c]	Annual mean – bias adjusted [c]
			Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
HF11	91%	83%		**66.63**	**72.10**	45.37	**66.55**	**78.81**	**73.74**	Missing Tube	**70.94**	**67.30***	**72.72***	**69.33***	**68.35**	**80.65**
HF12	100%	92%		36.72	31.14	26.42	27.78	27.59	24.54	22.20	28.42	28.67	**40.14**	33.70	29.76	35.11
HF13	91%	83%		**56.42**	**55.79**	**60.48**	**60.16**	57.03	**63.73**	53.67	46.48	51.65*	Tube Missing	52.04	**55.75**	65.78
HF14	100%	92%		**57.48**	**56.84**	28.08	**50.52**	**61.34**	52.98	54.78	50.43	54.82*	59.12*	48.31	52.25	61.65
HF15	100%	92%		36.25	32.06	33.58	30.03	25.35	25.48	22.98	27.80	28.85	38.16**	35.08	30.51	36.00
HF16	100%	92%		**67.31**	51.42	21.79	**56.16**	51.17	55.40	49.94	51.74	47.58	54.26*	56.83	51.24	60.46
HF17	100%	92%		36.59	34.71	**45.04**	31.59	30.75	28.30	28.25	36.86	35.00	39.67	37.97	34.98	**41.27**
HF18	72%	67%		**64.20**	**62.47**	43.81	51.68	51.97	Tube Missing	43.69	Tube Missing	Tube Missing	54.83*	55.72	53.55	**62.34**
HF19	100%	92%		**52.55**	**51.37**	40.42	**48.82**	**51.47**	46.25	45.50	51.26	50.53*	58.39*	53.26	49.98	58.98
HF20	100%	92%		34.84	28.81	23.89	20.64	22.06	20.73	21.04	27.15	28.01	37.61	35.65	27.31	32.23
HF32	100%	100%	**81.12**	**66.90**	**73.62**	28.29	**71.57**	**74.67**	**68.38**	59.15	**62.03**	57.90*	57.77*	59.13	**63.38**	**74.79**
HF44	100%	100%	**48.38**	29.81	24.57	**47.06**	**42.87**	16.70	17.64	17.88	22.16	24.02	12.59	29.13	27.73	32.73
HF45	92%	92%	**59.52**	38.96	33.86	Tube Missing	25.19	25.03	23.06	26.09	28.82	29.30	23.72	37.20	31.89	37.63

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data [c]	Annual mean – bias adjusted [c]
			Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
HF47	100%	100%	63.02	41.15	44.11	20.58	40.23	37.99	36.10	34.82	39.01	40.52	43.06	45.74	40.53	47.82
HF48	100%	100%	61.01	42.37	35.53	52.31	36.16	30.37	29.66	29.97	32.37	39.13	43.58	34.97	38.95	45.96
HF50	100%	100%	62.82	48.86	53.17	49.22	40.98	48.34	45.76	44.87	46.55	45.40	55.30*	45.88	48.93	57.74
HF53	92%	92%	56.54	36.36	35.48	47.36	Tube Missing	29.02	28.91	25.35	29.10	29.45	45.03	39.58	36.56	43.14
HF54	100%	100%	103.18	71.39	64.66	56.49	84.20	69.03	66.08	56.19	61.05	59.21*	57.04*	53.31	66.82	78.85
HF60	100%	100%	60.55	41.50	40.85	32.02	27.33	30.73	28.37	29.77	33.35	39.41	15.32	44.17	35.28	41.63
HF61	100%	100%	60.39	31.87	37.70	20.44	33.75	39.07	33.08	34.09	34.81	35.62	41.50	41.94	37.02	43.69
HF62	100%	100%	49.84	32.82	28.24	74.11	21.79	19.59	18.93	19.41	23.63	27.45	35.94	33.90	32.14	37.92
HF63	100%	100%	67.54	47.19	46.31	37.74	50.83	49.56	46.07	37.09	40.49	22.81	47.51	37.98	44.26	52.23
HF64 ***	100%	50%	75.05	51.84	54.25	51.39	44.38	47.77							54.11	58.21
HF64 ***	83%	42%							46.50	43.73	50.48	45.96	Tube Missing	41.91	46.67	60.35
HF65	100%	100%	70.75	55.09	49.96	27.14	42.17	40.74	39.84	42.36	43.05	45.41	49.49*	47.07	46.09	54.39
HF66	100%	100%	50.80	35.76	30.67	26.31	23.71	19.53	19.46	19.86	22.69	24.49	38.19	32.15	28.64	33.79

Exceedance of the NO_2 annual mean AQO of 40 µg m^{-3} are shown in **bold**. Exceedance of the NO_2 annual mean AQO of 60 µg m^{-3} are shown in **bold** and underlined.

[a] Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

*Diluted to read within Gradko's UKAS calibration range

**Close to building site

***This Tube was moved from July 2017